IN THE CLAIMS

Please amend the claims as follows:

1.   **(Currently amended)** A method of mathematically modeling pressure dynamics of a body's intracranial system comprising the steps of:

dividing the body into a plurality of compartments and a representation of a heart pump, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment, each of said plurality of compartments representing a portion of the body, said representation of a heart pump interacting with at least one of said plurality of compartments;

deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments;

      defining an atmosphere compartment, said atmosphere compartment representing a space located outside the body and wherein at least one of said plurality of differential equations accounts for a pressure of said atmosphere compartment; and

solving said plurality of differential equations.

2.   **(Previously presented)** A method according to claim 1, wherein at least one of said plurality of differential equations accounts for cerebrovascular autoregulation by the body's sympathetic nervous system.

3.   **(Original)** A method according to claim 1, wherein said plurality of compartments include a plurality of vascular compartments.

4.   **(Original)** A method according to claim 3, wherein said plurality of vascular compartments include a plurality of intracranial compartments.

5.   **(Original)** A method according to claim 4, wherein said plurality of intracranial compartments represent at least one of the intracranial arteries, intracranial capillaries, choroids plexus capillaries, venous sinus jugular veins, and intracranial veins.

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6.   (Original) A method according to claim 3, wherein said plurality of vascular compartments include a plurality of central body compartments.

7.   (Original) A method according to claim 6, wherein said plurality of central body compartments represent at least one of the central arteries, central capillaries, central veins, and extra-ventricular CSF.

8.   (Original) A method according to claim 3, wherein said plurality of vascular compartments include a plurality of lower body compartments.

9.   (Original) A method according to claim 8, wherein said plurality of lower body compartments represent at least one of the lower arteries, lower capillaries, and lower veins.

10.   (Original) A method according to claim 1, wherein said plurality of compartments include a plurality of non-vascular compartments.

11.   (Original) A method according to claim 10, wherein said plurality of non-vascular compartments represent at least one of the lower tissue, brain, ventricular CSF, and extra-ventricular CSF.

12.   (Canceled)

13.   (Original) A method according to claim 1, wherein said plurality of compartments include a rest of body compartment.

14.   (Canceled)

15. **(Previously presented)** A method according to claim 1, wherein at least one of said plurality of differential equations include a term representing pressure flow into and/or out of a corresponding one of said plurality of compartments.

16. **(Previously presented)** A method according to claim 1, wherein said plurality of differential equations include an equation simulating fluid filtration from capillaries into interstitial space.

17. **(Previously presented)** A method according to claim 1, wherein said plurality of differential equations include an expression simulating deformation of the membrane between adjacent compartments.

18. **(Currently amended)** A system for modeling an intracranial system comprising:

a body compartment module adapted to divide the body into a plurality of compartments and a representation of a heart pump, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment, each of said plurality of compartments representing a portion of the body;

___an atmosphere compartment, said atmosphere compartment representing a space located outside the body;___

an equation module adapted to derive a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments; and

an equation solver module adapted to solve said plurality of differential equations ___wherein at least one of said plurality of differential equations accounts for a pressure of said atmosphere compartment.___

19. **(Currently amended)** A system according to claim 18, wherein at least one of said plurality of differential ~~flow equations~~___equations___ accounts for cerebrovascular autoregulation by the body's sympathetic nervous system.

20.   (Original) A system according to claim 18, wherein said plurality of compartments include a plurality of vascular compartments.

21.   (Original) A system according to claim 20, wherein said plurality of vascular compartments include a plurality of intracranial compartments.

22.   (Original) A system according to claim 21, wherein said plurality of intracranial compartments represent at least one of the intracranial arteries, intracranial capillaries, choroids plexus capillaries, venous sinus jugular veins, and intracranial veins.

23.   (Original) A system according to claim 20, wherein said plurality of vascular compartments include a plurality of central body compartments.

24.   (Original) A system according to claim 23, wherein said plurality of central body compartments represent at least one of the central arteries, central capillaries, central veins, and extra-ventricular CSF.

25.   (Original) A system according to claim 20, wherein said plurality of vascular compartments include a plurality of lower body compartments.

26.   (Original) A system according to claim 25, wherein said plurality of lower body compartments represent at least one of the lower arteries, lower capillaries, and lower veins.

27.   (Original) A system according to claim 18, wherein said plurality of compartments include a plurality of non-vascular compartments.

28.   (Original) A system according to claim 27, wherein said plurality of non-vascular compartments represent at least one of the lower tissue, brain, ventricular CSF, and extra-ventricular CSF.

29.   (Canceled)

30.   (Original) A system according to claim 18, wherein said plurality of compartments include a rest of body compartment.

31.   (Previously presented) A system according to claim 18, wherein at least one of said plurality of differential equations include a term representing a pressure flow into and/or out of a corresponding one of said plurality of compartments.

32.   (Previously presented) A system according to claim 18, wherein said plurality of differential equations include an equation simulating fluid filtration from capillaries into interstitial space.

33.   (Previously presented) A system according to claim 18, wherein said plurality of differential equations include an expression simulating deformation of the membrane between adjacent compartments.

34.   (Currently amended) A method of modeling pressure dynamics of an intracranial system comprising the steps of:

dividing a body into a plurality of compartments and a representation of a heart pump, each of said plurality of compartments representing a portion of the body, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment, said representation of a heart pump interacting with at least one of said plurality of compartments;

establishing an atmosphere compartment, said atmosphere compartment representing a space located outside the body;

deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments, wherein at least one of said differential equations accounts for cerebrovascular autoregulation by a

sympathetic nervous system, wherein at least one of said plurality of differential equations accounts for a pressure of said atmosphere compartment; and

solving said plurality of differential equations.

35.   (Currently amended) A method of modeling pressure dynamics of an intracranial system comprising the steps of:

dividing a body into a plurality of compartments, each of said plurality of compartments representing a portion of the body, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment;

establishing an atmosphere compartment, said atmosphere compartment representing a space located outside the body;

providing a means for representing a heart pump that interacts with at least one of said plurality of compartments;

deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments, wherein at least one of said differential equations includes a means to account for cerebrovascular autoregulation by a sympathetic nervous system, wherein at least one of said plurality of differential equations accounts for a pressure of said atmosphere compartment; and

solving said plurality of differential equations.

36.   (Currently amended) A method of modeling pressure dynamics of an intracranial system comprising the steps of:

providing a means for dividing a body into a plurality of compartments and a representation of a heart pump, each of said plurality of compartments representing a portion of the body, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment, said representation of a heart pump interacting with at least one of said plurality of compartments;

providing a means for establishing an atmosphere compartment, said atmosphere compartment representing a space located outside the body;

providing a means for deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments and said atmosphere compartment; and

providing a means for solving said plurality of differential equations.

37.   **(Currently amended)** A method of modeling pressure dynamics of a body's intracranial system comprising the steps of:

dividing the body into a plurality of compartments and a representation of a heart pump, each of said plurality of compartments representing a portion of the body, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment, said representation of a heart pump interacting with at least one of said plurality of compartments, wherein a plurality of said plurality of compartments are vascular and a plurality of said plurality of compartments are non-vascular, said vascular compartments including at least one of the intracranial arteries, intracranial capillaries, choroids plexus capillaries, venous sinus jugular veins, intracranial veins, central arteries, central capillaries, central veins, extra-ventricular CSF, lower arteries, lower capillaries, and lower veins, said non-vascular compartments including at least one of lower tissue, brain, ventricular CSF, and extra-ventricular CSF;

establishing an atmosphere compartment, said atmosphere compartment representing a space located outside the body;

deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments and said atmosphere compartment; and

solving said plurality of differential equations.

38.   **(Currently amended)** A mathematical model for simulating pressure dynamics of an intracranial system, comprising:

a means for dividing the body into a plurality of compartments and a representation of a heart pump, each of said plurality of compartments representing a portion of

the body, said plurality of compartments including at least one intracranial compartment and at least one extracranial compartment-;

a means for establishing an atmosphere compartment, said atmosphere compartment representing a space located outside the body;

a means for deriving a plurality of differential equations, each of said plurality of differential equations governing a pressure dynamic of one of said plurality of compartments and said atmosphere compartment; and

a means for solving said plurality of differential equations.

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